

**REMARKS**

Claims 7, 8, 10, 12-15, 20-25, 28-30, 33, 35-37, and 40-43 are pending. Claims 7, 10, 20, 21, 22, 35, 40, and 41 are amended herein and claims 42 and 43 are added. Support for the claim amendments is discussed herein below. Reconsideration of the current rejections is respectfully requested in light of the remarks and amendments herein.

***Claim Rejections – 35 U.S.C. § 101***

Pending method claims 7, 10, 12-15, 22-25, 28-30, 33, and 35-37 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. As stated in the August 24, 2009, “Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101,” a patent eligible process must: (1) be tied to a particular machine or apparatus (machine implemented); or (2) particularly transform a particular article to a different state or thing. *See* Interim Examination Instructions at page 5, lines 1-3. The independent method claims (*i.e.*, 7, 10, 22, and 35) have been amended to explicitly recite steps performed using a processor as well as the storage of generated items such as assessment items in a computer-readable memory. It is respectfully submitted that these amendments squarely bring the method claims into compliance with the machine branch of the *Bilski* test. In light of these amendments, it is respectfully requested that the § 101 rejections of claims 7, 10, 12-15, 22-25, 28-30, 33, and 35-37 be withdrawn.

***Claim Rejections 35 U.S.C. § 103(a)***

Claims 7, 10, 12, 13, 20-25, 28-30, 33, and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweitzer (U.S. Patent No. 6,018,617) in view of Bloom (U.S. Patent No. 5,597,312). Claims 14, 15, 35-37, and 41 are rejected under 35 U.S.C. § 103(a) as

being unpatentable over Sweitzer and Bloom in further view of Wen (U.S. Patent No. 6,341,959).

**Claim 7**

Claim 7 recites a computer-implemented method of automatically generating a mathematical word problem assessment item. To expedite prosecution, claim 7 has been amended to specifically recite generating an assessment item using a processor including generating a text phrase positioned between a first numerical value corresponding to a first number variable and a second numerical value corresponding to a second numerical value. This amendment is supported throughout the specification including at FIG. 2, for example, where the paragraph in Column A includes two numerical values (*i.e.*, 216 and 54) with a text phrase positioned between the numerical values (*i.e.*, “miles at an average speed of”). Claim 7 has also been amended to recite that the text phrase positioned between the first and second numerical values is generated based on a determined relationship between the first and second variables corresponding to the first and second numerical values, respectively. Claim 7 has further been amended to recite subject matter from claim 8, where generating the text phrase comprises choosing one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on the determined relationship. For example, as described at paragraph [0052] of the published application, a logical schema generator can decide the format of information contained in a sentence including the type of verb to use and the ordering of elements.

It is respectfully submitted that the method of claim 7 is patentable over the combination of Sweitzer and Bloom. The cited portions of Sweitzer (col. 9, lines 61-63 and col. 11, lines 22-29) describe the generation of formula-based math problems, as shown in FIG. 3. These formula-based math problems do not include a text phrase between numerical values. For example, in the top question of FIG. 3 of Sweitzer, only a plus sign appears

between the two fractions. Thus, the cited portions of Sweitzer do not teach the claimed step of generating an assessment item including generating a text phrase between a first numerical value and a second numerical value.

It is noted that FIG. 5 of Sweitzer discloses a mathematic word problem based on predetermined text. However, this disclosure only teaches varying numbers inserted into placeholders within a predetermined question (*i.e.*, the placeholder “APPLES” is replaced by the number 2, and the placeholder “PRICE” is replaced by the number 0.20). This is described in Sweitzer at column 17, lines 52-54, which state that “the ‘random()’ external function varies the number of applies and their price, so that each student receives a unique question.” This portion of Sweitzer only inserts number values into placeholders. It does not generate a text phrase based upon a relationship between first and second number variables as required by claim 7, but rather simply inserts numbers into a mathematical word problem whose text is predetermined. The Office’s reliance upon Bloom does not make up for this deficiency. Accordingly, claim 7 is patentable over the applied references for at least this reason.

It is also noted that claim 8, whose subject matter has been incorporated into claim 7, was rejected by the Office with reference to Bloom. However, the tutoring system of Bloom does not teach or suggest the generating of a text phrase in a mathematical word problem based on a determined relationship between first and second number variables as required by claim 7. For example, the exercise function described at col. 6, lines 4-12 and the authoring tool described at col. 5, lines 58-61 of Bloom as cited by the Office describe a tool for aiding a trainee in working through a typical telemarketing conversation. Further, the grammar builder described at col. 19, lines 36-53 cited by the Office permits an “instructional designer or domain expert [to] use the discourse grammar by creating, instantiating and linking graphical objects to form a graphical representation of the actual discourse grammar.” It is

respectfully submitted that none of the cited portions of Bloom render claim 7 obvious, because the cited portions fail to consider a determined relationship between first and second number variables in generating a text phrase positioned between a first numerical value and a second numerical value including choosing one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on the determined relationship.

For at least the above-described reasons, it is respectfully requested that the § 103 rejection of claim 7 be withdrawn and that claim 7 be allowed.

#### **Other Independent Claims**

All of the other independent claims: 10, 20, 21, 22, 35, 40, and 41, have been amended to require generating an assessment item including generating a text phrase positioned between first and second numerical values wherein the text phrase is generated based upon the determined relationship between first and second number variables (or first and second identity variables, as recited in claims 35 and 41) and wherein generating the text phrase includes choosing one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on the determined relationship, in a similar fashion as for claim 7. As discussed above, the portions of the references cited in the rejection of claim 7 do not teach or suggest such a combination of features. Further, Wen also does not disclose or teach this subject matter. Because the cited references fail to teach or suggest the combination of features claimed, it is respectfully requested that the § 103 rejections of claims 10, 20, 21, 22, 35, 40, and 41 be withdrawn and that these claims be allowed.

The remaining dependent claims are allowable at least by virtue of dependency.

#### **New Claims 42 and 43**

New claims 42 and 43 have been added.

Claim 42 recites that the first numerical value and the second numerical value are both identified variables. This amendment is supported throughout the specification, including at FIG. 5 at 505, 510, for example, where ranges may be entered by a user for variables related to a first event and a second event.

Claim 43 recites that the first numerical value or the second numerical value is a constant identified by the one or more word problem parameters. Claim 43 is also supported by FIG. 5, for example, where constants may be entered at 515 for a first event and a second event.

### **Conclusion**

For at least the reasons set forth above, it is respectfully submitted that the pending claims of the instant application are allowable. A Notice of Allowance to that effect is respectfully requested.

The Commissioner is authorized to charge any fees that may be required by this paper to Jones Day Deposit Account No. 503-013 to maintain the pendency of this application.

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